AMENDMENT

Amendments to Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-11. (Canceled)

12. (Previously Presented) Apparatus comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of a muscle, comprising circuitry for controlling the start time and/or the duration of the electric potential generated between said at least two points which is synchronized to heart activity, said non-excitatory electric potential being a first phase of a bi-phasic pacing pulse .

13. (Previously Presented) Implantable apparatus comprising circuitry for causing a non-excitatory electric current to flow between at least two points located in the vicinity of a muscle and circuitry for controlling the start time and/or duration of the electric current, wherein said non-excitatory electric current is a first phase of a bi-phasic pacing pulse.

14. (Previously Presented) Apparatus for varying conduction velocity of a muscle, comprising circuitry for creating a non-excitatory electric potential between at least two points located in the vicinity of the muscle, and comprising circuitry for controlling the start time and/or duration of the electric current flowing between said at least two points which is synchronized to heart activity, said non-excitatory electric potential being a first phase of a bi-phasic pacing pulse .

15-17. (Canceled)

18. (Previously Presented) A method for varying conduction velocity of a muscle, comprising causing a non-excitatory electric current to flow between at least two points located in the vicinity of the muscle as a first phase of a bi-phasic stimulation pulse, and controlling one or more of the parameters consisting of start time, duration, magnitude and polarity of the non-excitatory electric current flowing between said at least two points.

19. (Currently Amended) A method according to claim ~~17 or~~ 18, wherein the muscle is a cardiac muscle.

20. (Previously Presented) A method according to claim 18, wherein the non-excitatory electric current is a DC current.

21. (Canceled)

22. (Currently Amended) A method according to claim 20 ~~18~~, wherein the flow of the non-excitatory DC electric current is synchronized to heart activity.

23-57. (Canceled)

58. (Currently Amended) Apparatus for heart pacing with cardiac output modification, comprising:

one or more electrodes adapted to apply electrical signals to cardiac muscle segments;

signal generation circuitry adapted to apply an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart and ~~an anodal~~ a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac output; and

at least one pressure sensor which senses cardiac activity, wherein the sensor is coupled to the signal generation circuitry, which generates the pulses responsive thereto.

59. (Currently Amended) Apparatus for heart pacing with cardiac output modification, comprising:

one or more electrodes adapted to apply electrical signals to cardiac muscle segments;

signal generation circuitry adapted to apply an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart and a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac output; and

at least one sensor which senses cardiac activity, wherein the sensor is coupled to the signal generation circuitry, which generates the pulses responsive thereto.

60. (Currently Amended) Apparatus for heart pacing with cardiac output modification, comprising:

one or more electrodes adapted to apply electrical signals to cardiac muscle segments;

signal generation circuitry adapted to apply an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart and a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac output; and

at least one oxygen sensor which senses cardiac activity, wherein the sensor is coupled to the signal generation circuitry, which generates the pulses responsive thereto.

61. (Currently Amended) A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) implanting a pacing electrode in a first chamber of a subject's heart;

(b) implanting a non-excitatory stimulation electrode in another chamber of the subject's heart;

(c) conveying an excitatory electrical pulse to at least one of the electrodes to pace the heart; and

(d) conveying a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the electrodes to modify the cardiac contraction.

62. (Currently Amended) A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) implanting at least one non-excitatory stimulation electrode in each of a plurality of chambers of a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the electrodes to pace the heart; and

(c) conveying a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the electrodes to modify the cardiac contraction.

63. (Currently Amended) A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) fixing at least one electrode to the epicardium of a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the electrodes to pace the heart; and

(c) conveying a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the electrodes to modify the cardiac contraction.

64. (Currently Amended) A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) applying one or more electrodes to a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart;

(c) conveying a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac contraction; and

(d) applying a sensor which senses cardiac activity to the subject's body,

wherein conveying the anodal non-excitatory stimulation pulse comprises generating a pulse responsive to the activity.

65. (Currently Amended) A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) applying one or more electrodes to a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart;

(c) conveying a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac contraction; and

(d) applying a pressure sensor which senses cardiac activity to the subject's body, wherein conveying the anodal non-excitatory stimulation pulse comprises generating a pulse responsive to the activity.

66. (Currently Amended) A method for heart pacing with modification of cardiac contraction, comprising the steps of:

(a) applying one or more electrodes to a subject's heart;

(b) conveying an excitatory electrical pulse to at least one of the one or more electrodes to pace the heart;

(c) conveying a non-excitatory anodal stimulation pulse as a first phase of a bi-phasic pacing pulse, the non-excitatory anodal stimulation pulse being of a magnitude and at a timing at which it is unable to generate a propagating action potential to at least one of the one or more electrodes to modify the cardiac contraction; and

(d) applying an oxygen sensor which senses cardiac activity to the subject's body, wherein conveying the non-excitatory anodal stimulation pulse comprises generating a pulse responsive to the activity.